

# Not by Rent Alone: Analysing the Pro-Poor Functions of Small-Scale Fisheries in Developing Countries

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*The dominant view in academic and policy arenas is increasingly one in which the major contribution of capture fisheries to development should be derived from the capacity of society to maximise the economic rent of fishery resources. Drawing upon empirical experience from the South, this article highlights the potentially disastrous consequences that a universal implementation of the rent-maximisation model would have in developing countries, and argues that a more gradual approach would be preferable. The welfare function of small-scale fisheries, namely, their capacities to provide labour and cash income to resource-poor households, should be preserved until the appropriate macroeconomic conditions for rent-maximisation and redistribution are fulfilled.*

**Key words:** Poverty reduction, common pool resources, safety nets, economic development, labour buffer

## 1 Introduction

In developing countries ... poor fishers contribute to their own poverty by destroying the fish resource and the wealth on which they depend. (Cunningham et al., 2009: 286)

One of the oldest and most persistent narratives in fisheries science is the discourse that links poverty with over-exploitation of the resource. According to this narrative – made famous by Garrett Hardin's 1968 article 'The Tragedy of the Commons' and illustrated by the quotation above – poverty in fisheries is directly related to resource (and catch) levels through an inverse relationship, reflecting a mechanistic Malthusian logic: over-exploitation of a resource 'owned by many' (and not managed effectively by anyone) leads to reduction in the catch, dissipation of the resource rent<sup>1</sup> and eventual poverty for the users and others who would otherwise benefit from the harvests (see, for example,

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1. The term 'resource rent' is often used in fisheries literature to describe (incorrectly) the economic rent – understood in the classical sense of rent. See Bromley (2009) for a rigorous discussion of these definitions of resource and economic rent in fisheries.

Pauly, 1990, 1997). Put in simple words: ‘too many fishers chasing too few fish make too little income’ (Sumaila, 2008).

On the other hand, it is also widely recognised that small-scale fisheries – if well-managed – can play a significant role in human and socio-economic development. Many see them as an entry point for poverty reduction through their role in generating revenues and creating employment, and their contribution to food security and the Millennium Development Goals (see, for example, Heck et al., 2007; Béné et al., 2007). The Food and Agriculture Organization, for instance, emphasises that ‘... small-scale fisheries can generate significant profits, prove resilient to shocks and crises, and make meaningful contributions to food security and poverty alleviation’ (FAO, 2003: 5).

Although at first sight paradoxical, this situation – where, on the one hand, small-scale fisheries are portrayed as a ‘last resort’ activity or even a ‘poverty trap’ (Christy, 1986; Cinner et al., 2009), while, on the other hand, they are also presented as a potential entry point for pro-poor interventions – reflects the complexity and heterogeneity of those small-scale fisheries. Admittedly, many fishers in developing countries still live on the ‘margin of human dignity’ (FAO, 1974, quoted in Copes, 1989: 6) and 20% of those employed in fisheries globally are thought to earn less than US\$1 per day (FAO, 2005) and yet small-scale fisheries often play a crucial role in local economies, regional rural development and poverty reduction.

This article aims to lift the veil of confusion that characterises the current discussion about small-scale fisheries and their relation with poverty and poverty-reduction policies. We attempt to clarify this relationship by reviewing what is known about poverty in fishing-dependent communities and outlining in particular the current policy debates about the role that small-scale fisheries play in the provision of safety nets and the contributions that they can make to pro-poor growth.

Recent discussion of poverty-related issues has been largely based on household or community-level case-study data and literature review (see, for example, Whittingham et al., 2003; Neiland and Béné, 2004; Allison and Horemans, 2006; FAO-SFLP, 2006a). Conjointly, the few studies that have considered the role – actual or potential – of the fishery sector in the wider (macro) economy and in the context of national poverty-reduction policies in developing countries have been based either on theoretical models or interpretations of standard fisheries economics. However, these have recently been challenged for their confused use of economic theory relating to property rights and the concept of economic rent (Wilson and Boncoeur, 2008; Bromley, 2009). The policy narratives currently being promoted by many international development agencies and their fisheries advisers tend to view current fisheries (and small-scale ones, in particular) as economically inefficient – implying the loss of an opportunity for revenue generation that could otherwise be used to create economic growth. This narrative emphasises the reinforcement of fishing rights, their concentration in fewer hands, and the efficient generation of economic surplus from the sector as the main ways by which fisheries can contribute to poverty reduction. The conclusion of the Commission on Fisheries, that was commissioned by the World Humanity Action Trust (WHAT) and composed of a panel of internationally renowned fishery experts, is illustrative of this current discourse. The first paragraph of the report reads:

The Commission concludes that effective governance of fisheries requires the assignment of enforceable rights to shares of fisheries. The importance of rights has been well known for decades, yet rights are either ineffective or nonexistent for most of the world's fisheries. As a result, many fishery resources have been overfished and tens of billions of dollars in economic benefits are wasted annually. (WHAT, 2000: 8)

This dominant narrative, re-asserted in the recent World Bank/FAO report *Sunken Billions: The Economic Justification for Fisheries Reform*, claims that the main role of the world's fisheries should be one of capturing 'the wealth of the ocean' and turning it into an economic surplus:

Rather than being a net drain on the global economy, sustainable fisheries can create an economic surplus and be a driver of economic growth. (World Bank and FAO, 2009: v)

This view is not new; Christy and Scott (1965), for instance, were amongst the first to suggest that the objective of the world's fisheries managers should be to maximise the rent from the sea.

Our objective here is to investigate whether this 'economic surplus' model (also increasingly referred to as the 'wealth-based approach' – see, for example, Cunningham et al., 2009) is realistic and relevant to small-scale fisheries in developing countries; how widely applicable it is; what the limitations to the theory and practice of this approach are; and what the potential alternative 'models' are.

Our focus will be on small-scale fisheries. The reason for this is straightforward. Small-scale fisheries employ 95% of the men and women engaged in the sector, and more than 90% of these operate in developing countries (FAO, 2007). In addition, if indeed small-scale fisheries can contribute to development in areas where poverty is prevalent, it then makes sense to focus on this sector in those parts of the world, as opposed to the large-scale fleets operating from industrial countries. This review will rely on field experience and case studies from Africa, Asia and South-East Asia where the authors have been working for various agencies and where fisheries activities are prevalent. When appropriate, other relevant examples from the development and/or fisheries literature will also be included.

The rest of the article is structured as follows. First, we review how the dominant economic development theory of the 1980s and 1990s has shaped in various ways the fisheries policies of developing countries. Second, we present in more detail the rent-maximisation (wealth-based) model and provide evidence that it is becoming dominant in current fisheries policy discourse. The emergence of divergent interpretations of how small-scale fisheries can contribute to poverty alleviation through their role as supplier of high-nutrient low-cost food for lower-income consumers, or as labour buffer and safety net, is also presented. Third, the situation of small-scale fisheries in developing countries is reviewed through a series of country studies with the objective of identifying empirically some of the major features characterising the sector, in particular in relation to poverty alleviation in the developing world. Fourth, we review the recent progress made in the literature in understanding and conceptualising the

relation between poverty and small-scale fisheries. These sections together allow us to evaluate rent-maximisation as a policy objective for developing-country small-scale fisheries and to consider a more contextualised approach to policy, based on an evaluation of what role each fishery can realistically best play in supporting poverty reduction, poverty prevention and food security.

Reflecting on these various conclusions, the article then discusses their policy implications and highlights in particular the potentially disastrous consequences that a universal and ill-considered implementation of the rent-maximisation model would have in developing countries. The final section concludes with a plea for recognition of the diverse roles that fisheries – large and small – play in poverty alleviation and the resultant need to design policy that enhances the most appropriate role in any given context.

## **2 Small-scale fisheries: between a rock and a hard place ...**

A useful first step for understanding the context within which fisheries and fisheries development policies have evolved in the course of the past three decades is to refer to the general theories on economic development that were prevalent at that time.

During the 1980s and early 1990s, the mainstream development agenda was strongly influenced by the ‘Washington Consensus’ (Gore, 2000). Under the new liberal economic order, the adoption of structural adjustment programmes – including market and political liberalisation, privatisation, macroeconomic reforms, and decentralisation – was the recognised way forward in economic development (see, for example, World Bank, 1991; Bourguignon and Morrisson, 1992; Williamson, 1993). As part of this approach, and in the name of economic and budgetary efficiency, a large number of government agencies in developing countries were downsized, privatised or merely dismantled (Killick, 1998; van der Hoeven, 2000). These reforms mostly affected public sectors (banking, education, health, transport) but also other sectors, including natural-resource management (for example, forestry) and agricultural extension services (Sarris et al., 1991; Pandey and Wheeler, 2001). Fisheries – an already marginalised sub-component within ministries of agriculture – were heavily affected. With drastic cuts in their human and financial resources, the capacities of these increasingly understaffed agencies diminished over the course of the 1990s, with dramatic consequences for their role in natural-resource monitoring, management and associated research (Blake, 2000; UNEP and CNROP, 2002). The report on impacts of structural adjustment policies on the fisheries sector in Senegal, Chile and the Philippines commissioned by IDRC concluded, for instance: ‘Cutbacks in government spending due to structural adjustment have undermined the ability of the state to monitor and police the fisheries code’ (IRDC, 1990: 4).

At the same time, pressure from donors and development agencies, relayed by civil society and international NGOs, led to the adoption of an increasing number of fisheries decentralisation reforms, including participatory, community-based and/or co-management projects (Pinkerton, 1989; Berkes, 1995; Béné and Neiland, 2006). However, in sharp contrast to the rhetorical discourse of that earlier period, it is now widely recognised that, to be successful, those decentralisation programmes needed more resources, improved co-ordination capacities, better accountability mechanisms, and stronger information exchange – in other words, more human capacity and more resources from government or other sources external to fishing communities, and certainly not fewer

(Crook and Sverrisson, 1999; Ribot, 2002; Béné et al., 2009a). In this context, many fisheries ended up in the paradoxical situation where greater capacities were urgently needed to ensure the success of those devolution reforms, while at the same time structural adjustment programmes and the general budgetary degradation that followed the introduction of these programmes had led to a substantial contraction in their financial and human resources. We could certainly point out here the potential cause-effect relationship between the dismantlement of those institutions and the subsequent ecological crises that have been affecting most of the fisheries stocks in the developing world.

In the mid-1990s, however, an important shift in development theory occurred, with the progressive emergence of the 'Post-Washington Consensus' (Baulch, 1996; Lipton, 1997; Gore, 2000). Under this new agenda, a renewed interest in interventions aiming at poverty reduction (for example, through the World Bank's Poverty Reduction Strategy initiative), debt cancellation, and recognition of the importance of the 'voices of the poor' emerged as part of a more people-centred development approach (Narayan et al., 2000). This trend eventually paved the way for the adoption of the Millennium Development Goals (UNDP, 2000). Conjointly, concepts such as self-esteem (Beck, 1994), vulnerability (Longhurst, 1994) and social exclusion were gaining growing attention (Atkinson, 1998), along with issues related to well-being, human and gender rights, civil society and social movements (Friedmann, 1996; Chambers, 1997; Sen, 1999). This 'New Poverty Agenda' (Maxwell, 2001) is now having an increasing influence on the debate on poverty in small-scale fisheries – a point upon which we shall elaborate below.

### 3 Small-scale fisheries, trade and growth

The literature on agricultural economics has also been instrumental in shaping the agenda of fisheries science in relation to poverty reduction. Beyond the original influence that conventional economic theory has had on fisheries, through seminal works such as those of Gordon (1954), Clark (1985) or Cunningham (Cunningham et al., 1985), the recent renewed interest in small-scale farmers shown by agricultural economists (the 'Agriculture for Development' or 'farmer first' model, as depicted in the 2008 *World Development Report*) is arguably another element that has influenced the way small-scale fisheries are now perceived in relation to poverty reduction. This 'smallholder' model, which has been adopted by many international development institutions (for example, IFAD) or political arenas (for example, NEPAD) stresses the potential engine for growth that small-scale farmers could represent for rural areas, in particular in Africa (Valdes and Foster, 2005; Hazell et al., 2007). In this context, the 'success-story' of the East African export-oriented high-value horticulture sector (Dolan and Humphrey, 2000; Minot and Ngigi, 2004) is viewed as additional evidence that this smallholder model might be the solution, and that trade with developed-country markets is of particular importance in this process (DFID, 2005).

Espousing this high-value, export-oriented strategy, an increasing number of donor agencies and developing-country governments are now being encouraged by their academic and policy advisers to push their national fisheries sector along a similar avenue, claiming that fish (in particular, high-value fish products) exported to developed countries' markets can be a powerful engine for poverty reduction and economic

development (Cunningham, 2000; Valdimarsson and James, 2001; FAO, 2007: 112-15). While fish trade statistics are indeed impressive – fish is one of the most traded food commodities in the world (FAO, 2005) – the debate about whether this trade actually benefits small-scale fishers and local populations – or possibly the wider national economy – is still unsettled (Kaczynski and Fluharty, 2002; Hersoug, 2004; Béné et al., in press). In that context the question of whether small-scale fisheries should follow the horticulture model is open. Of particular concern to a certain number of small-scale fisherfolk organisations and some activists and academics (for example, FAO, 2009a: 13) is the question of the capacities of small-scale fishers and traders to compete with larger operators in a global market where (eco)labels, quality standards and certification are becoming increasingly important (Henson et al., 2000; Gibbon and Ponte, 2005).

## 4 Contribution of small-scale fisheries to poverty alleviation

### 4.1 *Wealth-based model*

The model associated with this economic growth paradigm – the same as that promoted in the *Sunken Billions* report mentioned earlier – is called the ‘wealth-based’ model. Since its academic foundation has been formalised by the seminal work of Gordon (1954) and crystallised in the concept of Maximum Economic Yield (MEY),<sup>2</sup> the wealth-based model has received the support of a long list of leading fisheries economists; see, for example, Anderson (1977), Clark (1985), Cunningham et al. (1985), Hannesson (2004), Cunningham et al. (2009). In this model, the solution to the problem of poverty and resource degradation revolves around the necessity to make small-scale fisheries more ‘economically efficient’ while finding means to conserve fish stocks. The central ‘objective of a wealth-based fishery management is to “unlock” the inherent wealth, i.e., resource rent value [read ‘economic rent’] from the fish stocks, and the added value throughout the fish chain’ (Sumaila, 2008). Recently, the wealth-based model has been heavily promoted in a number of international fora, for example, the World Trade Organization and the United Nations (Sumaila, 2007a, b), or the 2008 Conference of the International Institute for Fisheries Economics and Trade (Kelleher, 2008; Willmann, 2008).

An important feature of this wealth-based model is that it espouses and reproduces the logic of the conventional Malthusian narrative. It is argued that, since poverty in fisheries is the result of ‘too many people and vessels depending directly on too few fish’ (Cunningham et al., 2009: 283), the solution is to restrict access to a limited number of operators through an efficient fishing rights system and to maintain the aggregate fishing effort (extraction rate) close to the MEY. By doing this, it is expected to maximise the wealth of the sector (in fact the economic rent), improve the profits of the remaining operators and possibly redistribute the benefits to the rest of society – by using, for instance, part of the tax and licence fees levied on the sector (what would then be correctly called the ‘resource rent’) for social-sector expenditure (Cunningham and Neiland, 2005; Cunningham et al., 2009). The argument is powerful and attractive, and

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2. The Maximum Economic Yield (conventionally referred to in the fisheries literature as MEY) is the level of fishing effort which maximises the aggregate economic profits when the fishery is considered as one single entity.

although, in actual fact, rent extraction and rent redistribution are not an easy task (Wilson and Boncoeur, 2008), both the theory and the reasoning of rent extraction have recently caught the attention of fisheries economists as a possible way to create enough wealth from fisheries to contribute to local (sub-national) and possibly national economic growth and poverty reduction in countries with significant fishery resources.

## **4.2 Welfare model**

Diverging from the fisheries economics view described above, a group of scholars recently defended an alternative model, which we propose to call the 'welfare model'. Relying on their in-depth knowledge of the southern African inland fisheries, Jul Larsen et al. (2003) claimed that the main contribution of small-scale fisheries to development and poverty reduction is not the resource rent that can be extracted from the sector, but the capacity of small-scale fisheries to absorb rural surplus labour. This capacity is what they call the 'safety valve' or 'labour buffer' function of the fisheries, closely linked to their common-pool-resource nature.

There is no doubt that the commons can lead to ecological tragedies ... but the theory omits to tell us that the commons also may play a very positive role, both for the individuals as well as for society. We argue that it is important to maintain the southern African freshwater fisheries as commons – as valuable local and even national assets through their function as buffers and safety valves – in particular if poverty reduction is taken into consideration. Instead of enforcing severe restrictions on resource use, the freshwater fisheries should continue to be used as a safety valve for local people as well as migrants – facilitating their adaptation to changes in the macro-economic environment and in their occupational surroundings. (Jul Larsen et al., 2003: 89)

Although other authors have also used this concept of labour buffer or safety valve (for example, Bailey and Jentoft, 1990), most of the previous references were usually made with a negative connotation – in relation to the concept of poverty trap – and often based on rhetoric. Jul Larsen and his colleagues were the first ones to articulate this concept of labour buffer in a coherent, evidence-based approach and to make explicit the link with a positive, poverty-prevention, mechanism. They based their claim on the evidence that the fishing effort and number of fishers operating in those fisheries fluctuated greatly over time, revealing the remarkable occupational and temporal mobility of people. For instance, in the case of Lake Mweru in Zambia, they show that during a 5-year period (between 1992 and 1997) no fewer than 3,000 fishermen left the fishery. Similar observations were made on a more general basis by Allison and Ellis (2001) who observe that, although mobility out of fishing is in theory reduced by the amount of capital invested in fishing assets, 'for most artisanal fisheries, and especially those in low-income countries, the assets tied up in fishing are not that great, and mobility is relatively high' (Allison and Ellis, 2001: 383). For Jul Larsen, this possibility for individuals to move in and out of fishing activity at various periods of their lives is the key element that makes these small-scale fisheries so important for the poor:

The geographical and occupational mobility characteristic of fisheries in southern African freshwaters ... is a key to understanding their importance for the countries, as well as for the people involved. They serve as buffers in the national and regional economy and they serve as an important economic safety mechanism for thousands of people. (Jul Larsen et al., 2003: 89)

Despite the rigour of Jul Larsen and his colleagues' analysis, one may point out that these authors are referring here to a particular setting characterising inland fisheries in Africa, with little technological development over the years, extremely long distances to the main markets and very moderate population pressure. Clearly, this setting cannot be generalised to other fisheries, and in particular to marine small-scale fisheries in Asia.

## 5 What can be learned from empirical data?

In this section we propose to review the situation of three developing countries (Vietnam, Indonesia and Mozambique) with the claim that many other countries could have been used instead (such as India, Bangladesh, Nigeria, Tanzania, Jamaica, etc.). In all these countries, small-scale fisheries represent an important element in the national economy. However, before moving to these countries, we shall begin this review by examining the historical evolution of one particular developed country, Norway, as this case will appear remarkably informative for our subsequent discussion.

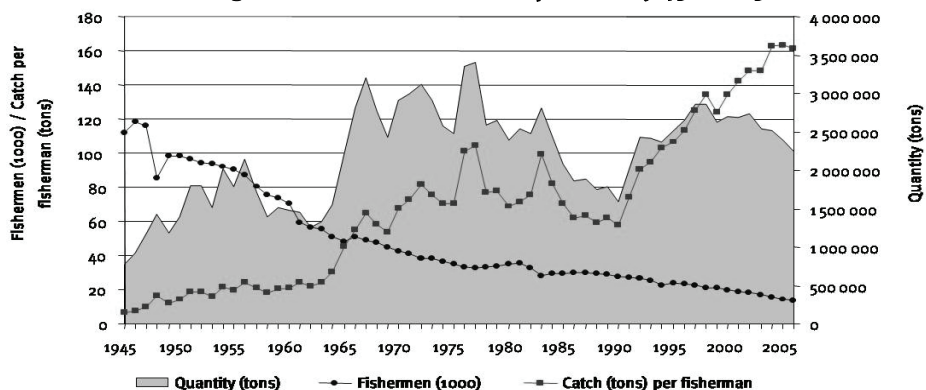
### 5.1 Norway

Figure 1 captures some of the main features that have characterised the last 60 years of Norwegian marine fisheries. In 1945, just after World War II, the country had 120,000 registered fishers (8% of the economically active population), while in 2009 that number is down by 90% to approximately 12,000 (0.5% of the active population). In the meantime, the total catch has increased threefold, rising from 850,000 to 2.5 million tonnes per year, indicating that the catch per fisher has been multiplied by 25, passing from approximately 8 tons to more than 200 tons per fisher per year. While natural variations and market conditions may have caused short-term fluctuations, the steady trend in productivity points to the enormous increase in technical efficiency that took place during that period. In spite of important subsidies throughout the 1950s-90s, which possibly kept more manpower in the sector than was strictly needed, the long-term trend in number of fishers has been steadily negative. Before that phase of modernisation, however, the sector had been acting as a major employer all through the crisis years of the 1930s, with many poor, small-scale fishers depending on those fisheries. The question, then, is how this transformation has taken place, which factors (push or pull) were at work, and what happened to the people who left the industry?

National statistics show that no significant increases in the number of unemployed were observed in the most important Norwegian fishing regions during the period 1950-90. While the level of unemployment in the coastal counties in the north of the country has always been higher than the national average, these figures are lower than the OECD average. Unemployment figures depend, however, not only on *push* factors (low income



**Figure 1: Catch, fisher number and catch per fisher in Norwegian fisheries over the period 1945-2005**



Source: Hersoug (2007).

or loss of jobs in the fisheries sector) but also on *pull* factors, that is, the availability of work and higher salaries in other sectors (frequently in the south). In fact, a closer look at the statistics reveals that, when unemployment figures in the south increase, out-migration from the fishing districts in the north decreases, indicating that the fluctuations in the number of fishers (and fish workers) depends to a large degree on these pull factors.

In sum: while the large number of Norwegian fishers in the late 1930s and 1940s was a sign of poverty, this situation has been reversed in the course of the last 60 years, largely due to economic development in other sectors. Today fishing in Norway is a well-paid activity, with fishers earning more than the average in other primary sectors. If these fishers were to keep up with the general increase in salaries across the country, they would, however, have to continue improving the technical efficiency of the sector by 2.5-3% per annum. Given the situation (a stable total allowable catch since 1977 and relative stable (real) prices for fish), this would mean that the total numbers of vessels and fishers would have to continue to decrease.

## 5.2 Vietnam

In Vietnam, fish-related activities are important in many respects. The sector represents 4% of national GDP and directly employs more than 650,000 fishers and aquaculture farmers, while the total employment figure, including support industries, is estimated to exceed 2 million. According to one of the latest sector studies (World Bank, 2005), the relative contribution of capture fisheries represents about 40% of the revenue generated and yields just under 60% of the country's total fish production revenues (capture fisheries + aquaculture). Export earnings from fish, shrimp and other seafood products totalled US\$3.7 billion in 2007, of which 50% was from shrimp aquaculture (Dzung, 2008). Both capture fisheries and aquaculture sectors have expanded rapidly over the last decade, with marine capture fisheries increasing from 800,000 tonnes to 1.8 million tonnes, inland capture fisheries reaching 200,000 tonnes (although this figure is still probably a gross underestimate), and aquaculture 2 million tonnes in 2005.

Although fishing and aquaculture arguably play an important role in the livelihoods of poor people, the Ministry of Fisheries had in the past taken a fairly minor part in policy formulation. It is only recently, with the elaboration in 2001 of the Sustainable Aquaculture for Poverty Alleviation (SAPA) programme, that the sector policies became more integrated in the overall strategy for poverty alleviation (Hersoug, 2008). At present, the main challenge as identified by the authorities is to reduce the number of people involved in the inshore, small-scale capture fisheries. The Ministry of Fisheries claims, for instance, that there is 50% overcapacity and that the number of fishers must be halved by 2010 (Pomeroy et al., 2009). So far, there is nothing to indicate that this goal can be met by ordinary management measures such as reinforcing the licensing system. Although the country has experienced strong economic growth over the last 20 years, this has not been sufficient to absorb the number of new active people entering the labour market every year. As a consequence, the number of fishers keeps increasing, with at least 25,000 extra entering the sector every year, in spite of reducing the catch and revenues. In fact, these revenues still seem to be higher than those in agriculture and other industries (Long et al., 2008). On the other hand, the growth in aquaculture, which has been even more impressive, is still not sufficient to reduce the number of coastal fishers.

### 5.3 Indonesia

After China, Indonesia is the country with the next largest number of people dependent on aquatic resources. There are 2.2 million full-time fishers and 2.3 million aquaculture farmers, which represents approximately 10% of world figures (FAO, 2009b). Unlike Vietnam, however, the Indonesian authorities have deliberately planned to *increase* this number further, in spite of the fact that many of the coastal resources are already overutilised. Indonesian fishers are not, however, the only ones to blame for this situation, as, during recent decades, thousands of Thai vessels have been fishing illegally or semi-illegally in Indonesian waters.

Today, the current efforts of the government to decentralise management through fisheries co-management reforms may be seen as a genuine attempt to abolish the previous top-down system. The provincial authorities are, however, often in need of money, and hence struggling with the temptation of entering into arrangements with foreign companies. While there is nothing (legally) wrong with entering into access agreements with foreign fleets, in the case of Indonesia the more than 2 million national fishers could probably make better use of the resources, and in particular create more value-added industry on land (Hersoug, 2008). In addition, the fragmented nature of this newly decentralised management seriously impedes any attempt at controlling the intensity of fishing activity, and, in particular, that of foreign fleets fishing in Indonesian national waters. The overall capacity of the country to monitor and control its national waters is, in any case, relatively weak. While 60 patrol vessels are engaged in Monitoring, Control, and Surveillance (MCS) – a larger number than in many other developing countries – the size of the zone to be controlled (more than 5 million km<sup>2</sup>) makes their task almost impossible. Although the Ministry of Marine Affairs and Fisheries claimed in 2004 that the number of foreign fisheries vessels operating illegally in Indonesian waters had dropped from 7,000 to just above 1,000 (Heazle and Butcher, 2007), the real situation is that the present control system is hopelessly inadequate to guard the enormous sea areas

within the Indonesian Economic Exclusive Zone, owing partly to the lack of patrol capacity and partly to the inefficiency in enforcing the existing regulations.

#### 5.4 *Mozambique*

Mozambique is considered to be one of the poorest countries in the world – ranked 175 out of 179 on the UNDP's HDI list (2008). The fisheries sector contributes at least 3% to GDP, and directly employs more than 100,000 people. While the industrial sector provides shrimp for export, the small-scale, artisanal sector delivers fish mainly for local and regional markets. At present the industrial capture fisheries are struggling to remain economically viable, owing to the dramatic increases in fuel prices and the declining prices for shrimp following the stiff competition imposed by Asian aquaculture producers on the EU markets. In contrast, the small-scale capture fisheries have experienced rapid growth since independence in 1976. Due to 16 years of civil war (1976-92), a steady stream of people have migrated to the coast, taking up fishing and collection of shells, crabs and snails as one of the few economic options left to sustain their livelihoods. This expansion has put strong pressure on the coastal resources, especially in areas with a large concentration of people, as in Maputo Bay, close to the capital. Indicators of productivity have gone down for several years, although the catches are recognised to be much higher than indicated in the official statistics (Jacquet and Zeller, 2007).

In such a situation some would expect a strong focus on access limitations, in an attempt to reduce the number of fishers. As with Indonesia, however, a different direction has been taken. The Mozambican authorities have developed a gradual approach, focusing on artisanal fisheries and subsistence. The justification for this can be summarised by the following quote from the Ministry of Fisheries (MoF):

At the extreme levels of the struggle for survival, any management intervention has uncertain results and most often is ineffective – it is not possible to restrict the actions of those who are on the margins of survival. (MoF, 2007: 24)

Market failure is seen as the most pressing issue in the small-scale fisheries sector. Improved access to roads is regarded as key, in combination with improved education, health services and provision of clean water. Licensing is clearly one of many measures to be implemented more effectively, but excluding extremely poor people is not seen as a viable option. Among other measures to be prioritised is the exclusive artisanal fishing zone of three nautical miles, which needs reinforcement through enhanced monitoring, control and surveillance. Finally, co-management and decentralisation are regarded as essential, since the original top-down management regime has neither the capacity nor the knowledge to implement the strategic plan for the artisanal fisheries sub-sector.

#### 5.5 *Policy lessons from case studies*

The above four cases highlight some interesting contrasts. In the case of Norway, the capture fishery, which served initially as a labour buffer at the beginning of the twentieth century, was later 'turned' into a rent-extracting sector, especially from the 1980s onwards. This orientation did not, however, create any serious problems in terms

of employment, because of the substantial growth that was taking place conjointly in other sectors of the economy (including salmon aquaculture). The case of Vietnam is quite different. There the coastal capture fisheries have so far been essentially a buffer for unskilled labour. However, the authorities have now decided to cut the numbers of small-scale inshore fishers drastically, without necessarily having a clear idea of how to implement this policy or how those excluded will find employment elsewhere. One option is to support aquaculture and fish processing, in the hope that these sectors will be able to absorb the still-growing number of rural workers entering the small-scale capture fisheries. In Indonesia, the government has chosen a completely opposite strategy. Aware of the crucial pro-poor role that small-scale capture fisheries have played so far for millions of rural people across the country, the government has accepted that the sector will continue to grow. This is not without challenge, however, given the poor and fragmented capacity of the country to monitor its marine resources and at the same time to control the important foreign fleets operating in its national waters. Finally, in Mozambique, while the industrial shrimp capture fisheries sector is clearly already geared towards rent maximisation, the authorities have instead taken a pro-poor stance in the small-scale capture fisheries, planning to leave this sector to play the role of labour buffer, at least in the short and medium term.

This overview demonstrates that the issue of how small-scale fisheries can best contribute to development and poverty alleviation in developing countries is by no means straightforward. Clearly, some 'hard choices' (Bailey and Jentoft, 1990) have to be made and, as suggested by the case studies above, the 'benefits' of small-scale fisheries do not, or should not, always be measured exclusively in terms of economic surplus. In contrast, the review provides some suggestive evidence that in many instances small-scale fisheries still have some role as a labour buffer.

Indirectly, and on a more global scale, some other statistics seem to confirm the existence of this labour buffer for the poor. First, the number of full-time fishers recorded in the world has increased at an average rate of 2.5 % per year since 1990 – a total of 400% since 1950 – representing a faster expansion than in the agricultural sector (35% growth over the same period (FAO, 1999)). In other words, the informal small-scale fisheries sector – so often denigrated for its backwardness and lack of productivity and viewed as an economic 'burden' by many (Platteau, 1989) – has, over the last 40 years, been proportionally more efficient than the agricultural sector in absorbing the excess of unskilled labour in the developing world. Furthermore, this was achieved without any of the support and investment (extension services, research, government planning) that the agricultural sector received.

Another set of global data reinforces this fundamental 'pro-labour' dimension of small-scale fisheries, namely, the data initially collated by David Thomson in the late 1970s (Thomson, 1980) and updated since then several times by FAO and most recently by BNP (2009). Contrasting small-scale fisheries with larger industrial fishing fleets through a series of relevant indicators, Thomson demonstrated unequivocally how 'small but mighty'<sup>3</sup> small-scale fisheries can be, in particular in terms of return to investment: for each US\$ million invested in fishing boats, small-scale fisheries are estimated to employ between 500 and 4,000 fishers (that is, 100 to 130 times more

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3. Expression used by Pauly (2007) in an updated adaptation of Thomson's argument.

people than larger-scale fisheries). Put differently, and still using some very crude estimates, Thomson's data suggest that the capital cost of each job created in small-scale fisheries varies between US\$250 and 2,500, which is less than 1% of what it costs in the larger, industrial, fleet.

While avoiding entering the often debated (but rarely addressed) question of why, in these conditions, small-scale fisheries are still largely overlooked by policy-makers (see, for example, Mahon, 1997), we shall simply stress that Thomson's argument confirms what Jul Larsen and others in other parts of the world claim, namely, the huge capacity of small-scale fisheries to create jobs for the poor, in particular in conditions where capital and investment are lacking.

## 6 Welfare mechanisms

This capacity to absorb unskilled labour is in fact part of what we propose to call the 'welfare function' of small-scale fisheries. In what follows, we analyse in more detail the various mechanisms which constitute this welfare function. Jul Larsen uses the terms 'labour buffer' or 'safety valve', but other terms, such as 'safety net' or 'last resort activity', have also often been used interchangeably in the literature to refer to the same idea (see Béné, 2003 for a review). Conceptually, however, two different mechanisms should be differentiated (Table 1), one corresponding to the 'labour buffer/safety valve' described by Jul Larsen and his colleagues, and the other referring to safety-net mechanisms, as conventionally described in the development literature (for example, Morduch, 1999).

**Table 1: Welfare mechanisms in small-scale fisheries**

	<b>Mechanisms</b>	<b>Beneficiaries</b>	<b>Strategies</b>	<b>Interventions</b>
Pro-poor dimension	<i>Labour buffer / safety valve:</i> Poor rural households rely more heavily on common-pool resources	Poor households unable to maintain a minimum living standard	<i>Ex-ante</i> strategy against long-term structural poverty	Improved marketisation, micro-credit or post-harvest losses programmes
Safety-net capacity	<i>Safety-net effect:</i> Fishery provides alternative and/or additional source of support in case of shock	Vulnerable households – may or may not be below the 'poverty line'	<i>Ex-post</i> response against transient poverty/shocks	Provision of social safety nets, reduction of income dependence on fishing, or improved access to formal insurance schemes

Source: Modified from Béné (2006).

## 6.1 *Labour buffer*

The 'labour buffer' of small-scale fisheries (the provision of jobs for unskilled workers) refers to the fact that poor people in rural areas often appear to rely to a larger extent on fishing activities to sustain their livelihood than better-off households. In situations of (economically or institutionally) restricted access to other capital (for example, financial capital such as credit) or production factors (such as private land), the common-pool nature of small-scale fisheries allows poor people to engage more heavily in this activity to generate the goods and services they need to sustain their livelihoods. This particular function is obviously of greater importance and relevance to the poor and marginalised households, since they are generally those with limited access to land and/or other resources. In this respect, a dimension of this labour buffer is comparable to the role other Common Pool Resources (CPRs) are known to play in the livelihoods of the rural poor. Beck and Nesmith (2001), for instance, provide evidence of the importance of CPRs, such as forests, rangeland, bushland, fallow fields, inland waterways, wetlands and seasonal ponds, for the poor in India and Africa (see also Jodha, 1992 for a global overview). As part of these CPRs, and because of their common or semi-open access,<sup>4</sup> small-scale fisheries can 'absorb' unskilled workers and provide them with a minimum living, in particular in rural areas.

## 6.2 *Safety-net function*

The second main function of small-scale fisheries in relation to their welfare dimension relates to their 'safety-net' capacity, that is, the fact that in periods of individual or collective economic crisis, fishing can provide alternative or additional sources of income, employment and food for the poor and vulnerable households whose livelihoods have been temporarily reduced or affected by unexpected shocks. Idiosyncratic shocks can happen, for example when a household head loses his/her job, or when farm crops fail. Crisis can also take the form of covariant shocks, when the whole local or even national economy suddenly deteriorates or collapses. Recurrent civil wars or military conflicts, population displacement and natural disasters – all frequent in developing countries – also create circumstances where affected households turn to fisheries as additional or alternative sources of income, food or employment. For example, in Lake Kariba, on the border between Zambia and Zimbabwe, the fishery has provided such a safety net for the southern African population three times during the last 40 years. First, in the mid-1970s when several thousand miners working in the

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4. The claim, so often encountered in the literature, that 'small-scale fisheries in developing countries are "open access" resources' does not correspond to the reality. Anyone who has worked closely with small-scale fisheries in developing countries knows that the access to fisheries (in particular, small-scale coastal or inland fisheries) is always conditioned by some form of formal or informal, symbolic or substantial, control systems generally established at the local/community level (Johanness, 1978; Fay, 1989; Asafu-Adjaye, 2000; Béné et al., 2003; Neiland et al., 2004). In addition, for fisheries that require a boat, the notion that the sector is 'open access' is clearly incorrect. Detailed livelihood analyses (for example, Allison and Mvula, 2002) demonstrate that the acquisition of a boat is often a major investment for households, often achieved in stages. In fact, in many cases, alternative avenues of income generation are required to accumulate sufficient capital to enter the fishery (Allison, 2002).

copper-belt in Zambia lost their jobs, migrated to the Lake region, and undertook fishing as an alternative livelihood (Jul Larsen, 2003); second, a few years later during the Zimbabwean Independence War when several hundred families moved to the Lake region for security reasons and entered the fishery to ensure minimum revenues until the security situation in their region of origin had improved (Machena and Kwaramba, 1997). More recent information suggests that the fishery is again playing this role with an increasing number of Zimbabweans moving back to the lake following the recent economic collapse of the country (Isaac Malasha, pers. comm., October 2007).

The important point highlighted in Table 1 is that safety-net mechanisms are mainly concerned with *temporary poverty* or *vulnerability* rather than *structural poverty*. This conceptual distinction (Devereux, 2001; Christiaensen and Subbarao, 2004) has important implications for policy and poverty-alleviation programmes in fisheries (Béné, 2009). While structurally poor households are unable to maintain a minimum living standard even with the resources at their disposal, vulnerable households can initially be above the poverty line but face risks or shocks that could drive them below that line almost instantaneously. In the first case, policies should promote interventions that improve their capacity to enhance their productivity through, for example, improved market integration, micro-credit, or by reducing post-harvest losses due to spoilage. In the second case, interventions will have to address the risks and uncertainties that affect the households through, for example, the provision of social safety nets, the reduction of income dependence on fishing, the diversification of livelihoods, or improved access to formal insurance schemes.

Clearly, both types of interventions are required to consolidate the critical role that small-scale fisheries play in supporting resource-poor households. The various functions (as part of an *ex-ante* strategy against structural poverty or as an *ex-post* response to shocks and risks) are all components of an overall welfare function which is critically important in developing countries.

## 7 Poverty reduction *versus* poverty prevention

In the poverty literature, poverty *reduction* generally describes situations where people are becoming measurably better-off over time due to their involvement/investment in certain economic activities (for example, Angelsen and Wunder, 2003). In contrast, poverty *prevention* refers to the role of an institution or an economic activity in helping people to maintain a minimum standard of living (even when this standard is actually below a given poverty line) and to prevent them from falling any deeper into destitution. In this regard, safety nets, as described by Devereux (2001), are essential means of poverty prevention. Adopting this distinction in the case of fisheries, poverty reduction in small-scale fisheries would therefore refer to situations in which wealth is generated and capital accumulated through investments in the sector, lifting those engaged in fisheries out of poverty. Poverty prevention, in contrast, would refer to situations where fishing contributes, through various mechanisms, to reducing risks and creating safety-net mechanisms in a general context of vulnerability (Béné et al., 2007: 10).

From these conceptual definitions, one can easily see the links with the wealth-based and welfare models (Table 2). While poverty reduction refers to the wealth-based model's mechanisms (generation of wealth and rent extraction leading to economic

growth), poverty prevention and its associated safety-nets and vulnerability-reduction mechanisms relates to the welfare model.



This parallel between the wealth-based model and poverty reduction, on the one hand, and the welfare model and poverty prevention, on the other, is not simply one of semantic or academic interest. It highlights some fundamental implications in terms of policy and in particular of management objectives (highlighted in Table 2 – last but one row): while the welfare model calls for the adoption of *inclusive* management systems that favour (or at least do not hamper) people's occupational and temporal mobility, poverty reduction, on the contrary, depends on the capacity of the fishery institutions and management system to actually ensure the opposite, that is, to *exclude* people from the fishery. At a societal level, the nexus between rent maximisation (poverty reduction) and welfare function (poverty prevention) needs therefore to be much better articulated and its consequences clearly evaluated before policies supporting a wealth-based approach can be implemented. Similarly, the inherent risk of resource over-exploitation induced by a more inclusive management approach is a risk that needs to be kept in mind. One can reasonably assert, however, that the probability of underestimating this risk is relatively minor, given the attention that the issue of overfishing usually receives in fisheries policy.

Note that this issue of exclusion is not denied or ignored by the advocates of the wealth-based model. As pointed out by the *Sunken Billions* report, 'Reforms will incur social and economic costs' (World Bank and FAO, 2009: v). What one may regret, however, is that, while great efforts have been made by the international agencies to estimate the rent dissipated in the world fisheries (for example, Garcia and Newton 1997; Kelleher and Willmann, 2006; World Bank and FAO, 2009), no parallel attempts have been made to properly evaluate what would be the social and economic costs of pursuing such rent extraction. It is merely asserted (Cunningham et al., 2009: 284) that 'the gains of the gainers will eventually be greater than the losses of the losers'. In particular, the socio-economic value of the welfare functions provided by small-scale fisheries both at macroeconomic (labour-buffer) and microeconomic/household (safety-net) levels is still undetermined. In the following paragraph we provide a very rough estimate of the economic value of the first component of this welfare function, while noting that quantifying the value of the second would be methodologically very difficult as it would imply estimating the number of non-fishing households in developing countries which are likely to engage in small-scale fisheries in the future as part of *ex-post* responses to unexpected shocks.

Based on the most recent figures, it is estimated that in the developing world 108 million people (54% men and 46% women) currently depend directly on small-scale fisheries and post-harvest activities (fish processing and fish trading) for at least part of their income (BNP, 2009). Based on Norwegian experience, transforming a labour-buffer sector into an effective rent-extractive sector implies a 90% reduction in the number of persons involved. On the scale of the world's small-scale fisheries, this would mean that (approximately) 95 million people would have to leave the fishery sector. If we further assume that the daily income derived by those men and women is



Table 2: Comparison of the wealth-based and welfare models in small-scale fisheries

Wealth-based model (for example, World Bank and FAO, 2008)			Welfare model (for example, Jul Larsen, 2003)	
Poverty reduction: Fishery contributes to lift people out of poverty			Poverty and vulnerability prevention: Fishery contributes to maintain a minimum standard of living	
Level	Contribution	Mechanisms	Contribution	Mechanisms
Household level/sector	<ul style="list-style-type: none"><li>• Generation of wealth</li></ul>	<ul style="list-style-type: none"><li>• Effective capture of fishery rent (capital accumulation)</li><li>• High level of commercialisation</li><li>• Access to effective market mechanisms</li><li>• Fish as cash crop for investment and diversification</li></ul>	<ul style="list-style-type: none"><li>• Safety-net function (transient poverty)</li></ul>	<ul style="list-style-type: none"><li>• Reduces vulnerability and mitigates poverty effects</li><li>• Food security through direct contribution (subsistence) but also fish as immediate source of cash income to cover basic needs (health, education, food)</li></ul>
Local level	<ul style="list-style-type: none"><li>• Engine for rural development</li></ul>	<ul style="list-style-type: none"><li>• Increased demand for goods and services</li><li>• Rise in wages</li></ul>	<ul style="list-style-type: none"><li>• Labour buffer / safety valve for the poor (chronic poverty)</li></ul>	<ul style="list-style-type: none"><li>• Alternative sources of income, food and/or employment.</li></ul>
National level	<ul style="list-style-type: none"><li>• Economic growth</li></ul>	<ul style="list-style-type: none"><li>• Trickle up to government through taxes and foreign-exchange earnings (regional or international trade)</li></ul>	<ul style="list-style-type: none"><li>• Social-redistributive system (welfare)</li></ul>	<ul style="list-style-type: none"><li>• Income and employment multipliers</li></ul>
Type of management system	 Restricted access (exclusive management system)		 Common pool / semi-open access (inclusive management system)	
Institutional context	Developed countries Industrial fisheries			Developing countries Small-scale fisheries

Source: Modified from Béné et al. (2007).

US\$3 per day (a relatively conservative figure),<sup>5</sup> and that their opportunity cost of engaging in fisheries is US\$1.25 per day (the poverty line), a basic replacement cost calculation would suggest that the value of the labour-buffer function of the world small-scale fisheries (maintaining those people above the poverty line) is US\$61 billion per year. For comparison, the World Bank-FAO report (2009) estimates that the rent dissipated every year in the world fisheries (including industrial fisheries) is equivalent to US\$50 billion. Note, however, that this is calculated mainly from industrialised high-seas fisheries. The two figures are therefore not strictly comparable.

There are, of course, a number of crude assumptions in this estimation, but not necessarily all in the same direction and certainly not systematically inflating the final figure. On the contrary, if we relax some of those assumptions and assume, for instance, that for, say, 75% of those small-scale operators, fishing is actually an ‘activity of last resort’ – an argument often put forward by the advocates of the Malthusian narrative and the proponents of the wealth-based model – then for those fishers/fish traders the opportunity costs of engaging in the sector become nil. In that case, the value of the labour-buffer function becomes US\$94 billion, twice as much as the US\$50 bn lost globally in dissipated rent.

Another important conservative figure has been included in this calculation, namely, the number of people depending on small-scale fisheries. We used here the estimated number of people depending *directly* on the sector for at least 30% of their income – i.e., both full- and part-time fishers (BNP, 2009). We did not account for the employment and income multipliers. Those, however, are recognised to be substantial in small-scale fisheries (Béné, 2006: 22-4). In Cameroon, for instance, the National Accounts Office has developed an income multiplier indicator called the ‘social accounting matrix multiplier’. Based on this, simulations show that fisheries activities have a 7.3 multiplier effect on revenue and therefore a strong positive ‘domino effect’ on the rest of the local economy (FAO-SFLP, 2006b). This multiplier effect is not, however, the result of the fisheries rents (which are almost totally dissipated in Cameroon) but the cumulative effect of the tens of thousands of small-scale workers operating in the fisheries and post-harvest sector (fish processing, fish trading). Reduce the access to the resources for those small-scale operators and it is likely that the multiplier effect will turn rapidly into a negative domino effect, with dramatic implications for the rest of the local economy.

## 8 Poverty in small-scale fisheries: some recent findings

So far this article has focused on the issue of how small-scale fisheries can best contribute to poverty alleviation and development. Without necessarily pointing to any definite answer, the analysis revealed that rent extraction and capital accumulation might not be the only way this can be done. This question of ‘small-scale fisheries as an

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5. The World Bank-FAO report (2009) estimates that the average gross revenue per full-time fisher in India’s marine fisheries was \$1,870 in 2004 for small-scale fishers – i.e. US\$5.3 per day assuming that they work 350 days per year. Vietnamese workers on Taiwanese (Province of China) fishing vessels operating in South African waters receive monthly pay of \$150 to \$180, i.e. US\$5.3-6.4 per day assuming again that they work 28 days per month.

entry point for poverty alleviation' is not, however, without direct links to the symmetrical question of the relation between small-scale fisheries and poverty. In this second part of the article, we therefore propose to discuss this other side of the coin and look at the recent progress made in the literature about poverty in small-scale fisheries. As the analysis will demonstrate, even from this side both theory and field data seriously question some of the arguments brought forward by the wealth-based approach and in particular the claim that poverty in fisheries is inherently linked to over-exploitation of the resources.

The past decade has seen an increasing interest amongst fishery academics to revisit the current narrative about poverty in fisheries. The New Poverty Agenda (Maxwell, 2001), which had emerged from the general development literature in the course of the 1990s, has been particularly useful in this respect. Focusing on human and social, rather than simply economic, dimensions, this new agenda stressed the importance of issues such as empowerment, human rights and capability, gender equity, and social exclusion.

Influenced by, and building upon, these various elements, analyses were put forward in the fisheries literature (Béné, 2003; FAO-SFLP, 2006a; Allison et al., 2006) which reflected this broader perspective. First and foremost, contrasting with the conventional Malthusian perception, these studies showed that there is no clear, linear relationship between poverty and resource levels. This finding derives, first, *conceptually* from the recognition that poverty is not a mono-dimensional status depending exclusively on the income generated through fishery activity, and, secondly, *empirically* from the observation made by many researchers and practitioners that fisherfolk are not systematically the 'poorest of the poor', at least in income terms. A recent review of the literature (Béné et al., 2009b: 116-17) reveals an increasing number of socio-economic studies confirming that small-scale fishers' revenues can actually be higher than those of other rural workers in the same communities or even when compared with national average figures.

The fact that small-scale fishers can make substantial cash revenues does not mean, on the other hand, that fishing communities are systematically better-off or less vulnerable than other households. A more thorough analysis is therefore required that can address the diversity of causes and characteristics of poverty in small-scale fisheries in a wider sense than the narrow, economic dimension associated with the Malthusian narrative.

Based on their field experiences in sub-Saharan Africa and Asia, Allison and his colleagues have proposed a new framework that combines poverty with two other concepts, which, they believe, are central in understanding the impoverishment process of fishing communities (Allison et al., 2006): vulnerability and marginalisation (Figure 2). We revisit this new framework below.

**Figure 2: Poverty, vulnerability and marginalisation as the 3 main dimensions of fishing communities' general deprivation**



Source: Allison et al. (2006).

### 8.1 Vulnerability

Vulnerability has emerged initially in specific fields such as epidemiology and food security (see, for example, Downing, 1991). Over the years, however, its meaning has expanded considerably to include a range of elements and situations of 'livelihood security' including exposure to risks, hazards, shocks and stress, difficulty in coping with contingencies, and linked to net assets (Longhurst, 1994). Today, vulnerability is often presented in the general development literature as a combined effect of risks to which people may be exposed, the sensitivity of their particular livelihoods to those risks, and their ability (or lack of) to adapt to, cope with or recover from the impacts of external shocks (Prowse, 2003; Adger et al., 2005). In the case of fisheries, the sensitivity of fisherfolk to risks is related to their cash dependence on fishery resources, and their adaptive capacity may depend on their ability to adjust to or avoid risks (for example, by drawing on assets such as savings for education and other livelihood activities).

Experience suggests that the exposure and sensitivity of fisherfolk to risks are relatively high in comparison with other socio-economic groups, and that their adaptive capacity is generally low. As recalled by McGoodwin (2001: 27), few land-based occupations confront their participants with the risks of losing all of their productive capital, as well as their lives, every time they go to work. Yet these possibilities are commonplace among many small-scale fishers. McGoodwin goes on to assert: 'both large- and small-scale approaches to fishing comprise some of the most hazardous and economically risky occupations in the world'. Indeed, fisherfolk appear to be highly exposed to physical risks (drowning, accidents while hauling nets, etc. – see, for example, ILO, 2000), climate-induced risks (natural disasters – for example, tsunami, tropical storms, floods – or variability of fish stocks, Allison et al., 2009), health risks (water-borne diseases, HIV/AIDS, Kissling et al., 2005), or political and security risks (theft, inter-ethnic or inter-country conflict) among many others (See Table 3). Market volatility (currency devaluations, increases in fuel prices) also make small-scale

fisherfolk, along with smallholder farmers, landless households and ethnic indigenous people, among groups identified by IFAD as ‘functionally vulnerable groups’ who are ‘economically insecure and thus particularly sensitive to the slightest change in external factors’ (Jazairy et al., 1992: 468).

**Table 3: Examples of fisherfolk’s vulnerability to various shocks and stresses**

The three elements of vulnerability		
Exposure to risk or hazard (High)	Sensitivity (High)	Adaptive capacity (Low)
HIV: prevalence very high in many fishing communities	Fishing requires good health; illness results in diminished ability to fish	Lack of medical services; lack of savings and other assets
Climate change and variability: tsunamis, floods, storms, changes in fish stocks	Many fisherfolk have a high degree of dependence on fishing in their livelihood portfolios	Lack of rights to land, no insurance, limited assets (such as education) to assist in finding alternative occupations
Taxation: the fisheries sector is often viewed as a source of revenue to fund local government	Fish are perishable and highly traded and therefore easy to tax	Fisherfolk have limited political power to contest unfair and unofficial taxation; local government accountability to fisherfolk may be limited

Source: FAO-SFLP (2006b).

The three elements of vulnerability (exposure, sensitivity, lack of adaptive capacity) may all be strongly correlated with other forms of ‘poverty’. For example, persons living in income-poverty may be more likely to live in an area where they are exposed to health risks from poor sanitation conditions. Likewise, if their nutritional status is poor, they will be more sensitive to infection than well-nourished persons. If they lack money for health treatment, their capacity to cope with, and recover from, infection will be lower than that of wealthier households (Seeley and Allison, 2005). A previous review of the literature on poverty in fishing communities (Macfadyen and Corcoran, 2002) concludes that targeting the vulnerable – those with a high chance that they will fall into poverty – may be as important to poverty alleviation as focusing on those who are currently the poorest in terms of income or material assets. More globally, this concept of vulnerability is now re-emerging strongly in the development literature as a key element in poverty (Moser, 1998, Prowse, 2003; McCulloch and Calandrino, 2003), and is particularly stressed in the context of the development implications of global climate change (Adger et al., 2009).

## **8.2 Marginalisation**

The second important concept included in Allison et al.’s analytical framework is marginalisation. Marginalisation (or social exclusion) describes a process by which

certain groups are systematically disadvantaged because they are discriminated against on the basis of their ethnicity, race, religion, sexual orientation, caste, gender, age, disability, HIV status, migrant status or because of where they live (Rogers et al., 1995; Atkinson, 1998). Discrimination can occur in public institutions, such as the legal system or education and health services, as well as social institutions (household or community, see, for example, Cleaver 2005), but also very often in the private sector through, in particular, the labour market (Banerjee and Knight, 1985). In fisheries at the macroeconomic level, evidence suggests that small-scale fisherfolk are often excluded from processes of development planning, either because they are mobile (including unregistered international migrants), living in marginal and remote areas, or simply because their role and contribution to the economy are poorly known and underappreciated (Sugunan et al., 2007: 460-5). At the microlevel, social discrimination often works against the poor, including fishing communities. Toufique (1997), for instance, showed how discrimination and power asymmetry in Bangladesh rural communities lead to economic exclusion and prevent the poorest from accessing the fisheries resources.

Béné and Friend (in press) use this new Poverty-Vulnerability-Marginalisation framework to analyse poverty (understood in a multi-dimensional sense) in inland fisheries in Africa and Asia. They show, in particular, how poverty, vulnerability and social exclusion are inter-related and tend to reinforce each other in fish-dependent communities. Other recent research in Mali and Nigeria (Mills et al., 2009), based on participatory vulnerability and risk-mapping, shows how individuals' and communities' perception of main risk and vulnerability to livelihoods security often relates to health issues, insecure rights of access to land and/or landing sites, unpredictable seasons and weather, rising costs of inputs (in particular fuel and fishing gear), and fish-market volatility (price, demand). In contrast – and certainly to the surprise of many fisheries management experts – those participatory vulnerability exercises show that issues related to the excludability of the resource (too many fishers) or its subtractability (decline in the fish stock) appear only as 'medium' sources of threat for the communities interviewed. Similar conclusions were also found in FAO-led research in Burkina Faso and Ghana (Pittaluga et al., 2003a and b).

## 9 Implications for pro-poor intervention in small-scale fisheries

Our improving understanding of the nature of poverty among fisherfolk suggests a fundamental shift in the way poverty programmes and interventions in fisheries should be conceived. The wealth-based approach, rooted in the rhetoric of the Malthusian discourse, suggests that poverty interventions should essentially focus on reduction of fishing effort and resource access control, in the hope that they will rebuild productivity and restore the rent derived from the fishery, leading to poverty reduction both within and outside the fishery (Homans and Wilen, 2005; Grafton et al., 2008; World Bank and FAO, 2009).

As suggested above, this interpretation is open to dispute in the case of developing countries both conceptually and empirically. Conceptually, because this view reduces 'poverty' alleviation programmes in fisheries to an economic (rent capture) and fishing-right issue and to a direct relationship between income and level of catch.

Understanding poverty in a much wider sense, and including other dimensions such as vulnerability and marginalisation, reveals that a large part of the destitution that affects the livelihood of fish-dependent communities is not resource-related, at least not directly. Mills et al.'s participatory vulnerability and risk-mapping exercise mentioned above is a powerful demonstration of this reality. For a large number of fishing households across the developing world, the risks of ill-health or death from malaria, HIV/AIDS, waterborne diseases, or from drowning are perceived as more important than the risks of resource degradation or stock collapse. In this context, many other domains of intervention have potentially even greater effect on the livelihood of those 'poor' fisherfolk than conventional fisheries-management interventions such as mesh-net regulations, reduction of fishing effort, or enforcement of exclusive fishing rights. What is needed instead is investment in fisherfolk's health and education, improving the governance and efficiency of fishing-related labour markets, supporting gender equity, addressing justice and security, and upholding basic human rights.

Empirically as well, evidence from developing countries seriously questions the wealth-based model. As suggested by Jul Larsen and his colleagues in the case of the southern African inland fisheries, and confirmed by other examples from the rest of the world (some of which were reviewed here), the contribution of small-scale fisheries to developing countries' economies does not seem to lie in the *potential* rent that they could generate but in their *actual* capacities to absorb unskilled surplus labour and provide safety-net and risk-mitigation mechanisms for millions of resource-poor households in a general context of vulnerability. The wealth-based approach ignores this welfare function or, even worse, aims at eliminating its benefits through the enforcement of exclusive fishing rights. While the case of Norway (or similarly New Zealand, Iceland, or other developed countries) suggests that the wealth-based approach may be effective in turning *developed* countries' fisheries into a powerful engine for local or national economic growth (depending on the size and value of the available resources relative to the size of the economy), the cases of Vietnam, Indonesia or Mozambique suggest totally different dynamics when small-scale fisheries in *developing* countries are considered.

Perhaps an even greater (pragmatic) limitation in the implementation of the wealth-based approach in developing countries is the reported inability of these countries to establish the appropriate managerial, institutional and governance conditions to create or/and ensure the pro-poor redistribution of the rent generated by the sector. The cases of Mozambique and Indonesia were symptomatic in this respect, as these countries reflect the situation of a quasi-majority of the developing countries. In fact, using structural macroeconomic models, Wilson and Boncoeur (2008) show theoretically that, even in the eventual case of a successful rent-extraction scenario, there is still no assurance that this rent would lead to economic growth, as the wealth generated by the sector may evade the country or even harm the local economy (for example, if used to purchase imported goods). Béné et al. (in press) make a similar analysis from an empirical point of view in the case of fish trade in sub-Saharan Africa. They show that, while there is no doubt that huge benefits are generated from fish trade, there is no evidence that suggests that those revenues systematically trickle down to the rest of the economy.

In sum, to the question of what model appears to better reflect the capacity of small-scale fisheries to contribute to poverty alleviation in developing countries, both empirical and recent theoretical analyses seem to converge and suggest that, while the answer remains complex for a large number of developing countries, it is, nevertheless, likely to lie closer to the welfare model than to the wealth-based model. In fact, based on the evidence presented in this article we argue that rent extraction may be an economically justifiable objective in the context of well-governed and institutionally strong fisheries in developed countries where the rest of the economy is dynamic, but that the welfare model remains the most appropriate model to describe the main role of small-scale fisheries in economically and institutionally weak developing countries. This point is highlighted in the last row of Table 2. Interestingly, it seems that this point is also the conclusion that the experts of the WHAT Commission eventually reached:

For complex, small-scale, multi-species fisheries with limited scientific and enforcement capability, rights-based fisheries management with shares specified as catch quotas or ITQs [individual transferable quotas] are not a realistic option. Furthermore, where there are few alternative livelihoods for large coastal populations and weak or nonexistent social welfare systems, a rapid reduction in participation in fisheries would be disastrous. (WHAT, 2000: 11)

This part of their conclusion was not presented, however, in the first page of their document (as opposed to the other quotation mentioned earlier) but relegated to a subsection near the end. This is unfortunate, as what is presented in the quote above as an ‘exception to the rule’ applies in fact to 90% of the world’s fisheries and 95% of the people who depend upon them.

## 10 Conclusion

A wealth-based approach supporting reduction of fishing capacity and rent extraction is seen by many as the way forward in the world’s fisheries. There is little doubt that fisheries – even small-scale fisheries – *in the right governance, institutional and macro-economic context* can generate rent and contribute to local economic growth, as demonstrated in the case of Norway and numerous other examples (for example, Flaaten and Heen, 1995; Hersoug, 2002; Hackett et al., 2005). The wealth-based model therefore has its own merits and ‘terrain’ of relevance. What we are claiming, however, in this article is that this model is not adapted to the majority of small-scale fisheries operating in developing countries. In those countries, a severe lack of capacity and resources (worsened by the structural adjustment programmes implemented in the 1990s), poor governance and a weak public and private institutional context make it very difficult to ensure the creation, or subsequently the equitable redistribution, of this rent. Even proponents of wealth-based management concede this point: ‘in a developing context ... fiscal and legal institutions are immature [and] both capital market and fiscal (and/or legal) regimes may be inadequate to ensure either the full realisation of the potential resource value or its equitable distribution’ (Cunningham et al., 2009: 278). In these conditions, relying on rent maximisation as the main path to poverty alleviation appears unrealistic.



What the field data reveal, instead, is that the main contribution of small-scale fisheries to poverty alleviation in developing countries may lie, paradoxically, in their semi-open, or common access, nature. This should not come as a surprise, however. It has long been recognised that resource-poor people often rely more heavily on common pool resources than better-off households (Jodha, 1992; Beck and Nesmith, 2001). Note, however, that the welfare model does not address directly the risk of over-exploitation of the resource. Inclusive management approaches do not indeed offer clear ways out of this issue. As recognised by Jul Larsen and his colleagues: ‘There is no doubt that the commons can lead to ecological tragedies’ (2003: 89).

In any case, for the large majority of households involved in fishing activities (full-time, temporary or occasional) in developing countries, fishing and related activities do not generate high economic returns but, instead, help them to sustain their livelihoods and prevent them from falling deeper into deprivation. The literature, which emphasises how important this poverty-prevention mechanism is for the poor, usually refers to mechanisms such as safety-net activity, labour buffer or safety valve. In this article we regroup these under the term ‘welfare’ function, which we claim is crucial from a social and economic point of view, especially in remote areas where alternative employment may be scarce and social-security programmes either minimal or non-existent. In these areas fisheries play a critical role as an informal ‘social protection system’ (as defined by Barrientos et al., 2005) for the resource-poor – a system which would otherwise have to be provided through other forms of social support by local or central governments.

In this context, it seems to us that the first priority in the management of the world’s small-scale fisheries should not be to ‘teach fisherfolk to repair bikes, sewing machines and water pumps’, as suggested by Pauly (2005) in a commentary in the journal *Nature*, but instead to ensure that those alternative livelihoods are effectively available *prior* to forcing people out of the fisheries sector. Timing and sequencing are indeed critical. The transition to a wealth-based model should follow the transformation of the rest of the formal economy, not precede it. Until developing countries’ economies have been strengthened, formal social-security mechanisms established, and institutional and governance conditions put in place to ensure an effective redistribution of the sector’s rent, pursuing a wealth-based approach in small-scale fisheries would be premature and harmful, both for the households which critically depend upon the sector for their livelihoods, and for the rest of the economy which is linked to the sector through income and employment multipliers. Until these conditions are in place, the main contribution of small-scale fisheries remains their capacity to provide labour and minimum cash-income to more than 100 million men and women in the developing world. A rough evaluation of the global (world) value of this labour-buffer function was put forward in this article. Our ‘back-of-the-envelope’ calculation suggests that it is probably worth more than US\$61 bn per year, i.e. substantially more than what is estimated to be ‘lost’ in the dissipation of the world fisheries’ economic rent.

This alternative view supporting the welfare function of small-scale fisheries is emerging not as an ideological or romantic attachment to some ‘traditional’ forms of production and/or lifestyles but as the result of evidence-based and economic rationality: in developing countries, the most impact-effective poverty interventions should reflect and draw upon small-scale fisheries’ labour-intensiveness. In this context,

the second major priority for fisheries researchers and practitioners will be to make sure that national policy-makers and international development agencies are fully aware of the nexus that exists between the policies promoting economic rent maximisation and economic growth as a solution for poverty reduction, and the current welfare function fulfilled by small-scale fisheries in developing countries. By emphasising these conclusions our intention is not to replace one oversimplistic view (the wealth-based model) by another one (the welfare narrative). Our intention is, instead, to return the debate to a more 'empirically-realist' ground, with the objective of improving the formulation of policies that support the contributions of fisheries to poverty alleviation in developing countries.

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